

DIALINDEX(R)

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\*\*\* DIALINDEX search results display in an abbreviated \*\*\*

\*\*\* format unless you enter the SET DETAIL ON command. \*\*\*

You have 62 files in your file list.

(To see banners, use SHOW FILES command)

?s (etch?) (15w) (SiOC or SiCO or oxycarbide or carbon(w)doped(4n) (oxide or dioxide))

Your SELECT statement is:

s (etch?) (15w) (SiOC or SiCO or oxycarbide or carbon(w)doped(4n) (oxide or dioxide))

Items	File
-----	-----
1	2: INSPEC_1969-2003/Sep W3
2	8: Ei Compendex(R)_1970-2003/Sep W3
2	34: SciSearch(R) Cited Ref Sci_1990-2003/Sep W3
1	94: JICST-EPlus 1985-2003/Sep W3
1	95: TEME-Technology & Management_1989-2003/Sep W2
1	96: FLUIDEX_1972-2003/Sep
2	144: Pascal_1973-2003/Sep W3

### Status: Break Sent.

?b 2,8,94,144;s (etch?) (15w) (SiOC or SiCO or oxycarbide or carbon(w)doped(4n) (oxide or dioxide))

01oct03 14:42:15 User264704 Session D160.4  
\$2.45 1.225 DialUnits File411  
\$2.45 Estimated cost File411  
\$0.46 TELNET  
\$2.91 Estimated cost this search  
\$26.20 Estimated total session cost 4.723 DialUnits

SYSTEM:OS - DIALOG OneSearch

File 2:INSPEC 1969-2003/Sep W3

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\*File 2: Alert feature enhanced for multiple files, duplicates

removal, customized scheduling. See HELP ALERT.

File 8:Ei Compendex(R) 1970-2003/Sep W3

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File 94:JICST-EPlus 1985-2003/Sep W3

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File 144:Pascal 1973-2003/Sep W3

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Set	Items	Description
---	-----	-----
	157008	ETCH?
	291	SIOC
	186	SICO
	755	OXYCARBIDE
	900549	CARBON
	261210	DOPED
	649825	OXIDE
	239742	DIOXIDE
	70	CARBON(W)DOPED(4N) (OXIDE OR DIOXIDE)
S1	6	(ETCH?) (15W) (SIOC OR SICO OR OXYCARBIDE OR CARBON(W)DOPED(4N) (OXIDE OR DIOXIDE))

?rd

...completed examining records

S2 4 RD (unique items)

?t s2/full/all

2/9/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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7381955 INSPEC Abstract Number: B2002-10-2550F-034

**Title: Challenge of ashing and cleaning on SiOC-H dielectric: characterization and main issues**

Author(s): Louveau, O.; Louis, D.; Assous, M.; Blanc, R.; Brun, P.; Lamy, S.; Lajoinie, E.

Author Affiliation: STMicroelectronics, Grenoble, France

Journal: Microelectronic Engineering vol.61-62 p.867-74

Publisher: Elsevier,

Publication Date: July 2002 Country of Publication: Netherlands

CODEN: MIENEF ISSN: 0167-9317

SICI: 0167-9317(200207)61/62L:867:CACS;1-E

Material Identity Number: F621-2002-003

U.S. Copyright Clearance Center Code: 0167-9317/02/\$22.00

Document Number: S0167-9317(02)00486-0

Language: English Document Type: Journal Paper (JP)

Treatment: Practical (P); Experimental (X)

**Abstract:** During process development of post etch cleaning for dual damascene copper/ SiOC -H structures, two different kinds of new problems were faced. While a good efficiency is obviously still needed, attention must also be given to dielectric modification and photoresist poisoning which can be induced by the cleaning processes. This study examines different ways of characterization of these phenomena. (6 Refs)

Subfile: B

**Descriptors:** copper; dielectric thin films; hydrogen; integrated circuit interconnections; photoresists; silicon compounds; sputter etching; surface cleaning

**Identifiers:** SiOC-H dielectric; plasma ashing; cleaning; process development; post etch cleaning; dual damascene copper interconnections; dual damascene Cu/SiOC-H structures; dielectric modification; downstream plasma; photoresist poisoning; Cu-SiOC:H; SiOC:H

**Class Codes:** B2550F (Metallisation and interconnection technology); B2550E (Surface treatment (semiconductor technology)); B2810 (Dielectric materials and properties); B2550G (Lithography (semiconductor technology))

**Chemical Indexing:**

Cu-SiOC:H int - SiOC:H int - SiOC int - Cu int - Si int - C int - H int - O int - SiOC:H ss - SiOC ss - Si ss - C ss - H ss - O ss - Cu el - H el - H dop (Elements - 1,3,1,4,5)

SiOC:H sur - SiOC sur - Si sur - C sur - H sur - O sur - SiOC:H ss - SiOC ss - Si ss - C ss - H ss - O ss - H el - H dop (Elements - 3,1,4)

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2/9/2 (Item 1 from file: 8)

DIALOG(R)File 8: Ei Compendex(R)

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06423958 E.I. No: EIP03267514594

**Title: Characterization of low-dielectric-constant SiOC thin films deposited by PECVD for interlayer dielectrics of multilevel interconnection**

Author: Kim, Hyeon Joong; Shao, Qingyi; Kim, Yoon-Hae

Corporate Source: School of Materials Sci./Eng. Seoul National University, Seoul 151-742, South Korea

Source: Surface and Coatings Technology v 171 n 1-3 Jul 1 2003. p 39-45

Publication Year: 2003

ISSN: 0257-8972

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical); X; (Experimental)

Journal Announcement: 0307W1

**Abstract:** Low-dielectric-constant (  $k$  ) SiOC films were deposited on p-type (100) Si substrates by radio frequency (RF) PECVD with a bis-trimethylsilylmethane (BTMSM) precursor and oxygen gas. As more carbon was incorporated into the SiOC film, both the film density and refractive index decreased. This is because the decrease in film density on adding carbon in SiOC films resulted from termination of the Si-O bonding network

by replacing oxygen atoms with hydrocarbon groups. The etching characteristics of low- $k$  SiOC and SiOF films were investigated by Fourier-transform infrared (FTIR) spectroscopy. The Si-O stretching vibration mode in SiOF films shifted to higher wavenumber with increasing fluorine incorporation, while that in SiOC films shifted to lower wavenumber as the carbon content increased. The origin of the low  $k$  of SiOC films was also investigated by determining the electronic, ionic and dipolar contributions. It was found that the low  $k$  of SiOC films mainly results from a reduction of the ionic contribution due to a decrease in Si-O bonds in the films. Investigating the compatibility with integration processes showed that modification of the conventional process was required to improve the etch characteristics of the SiOC film. Post-deposition treatment of SiOC films in hydrogen plasma was effective. The results of this study show that SiOC film is very promising low- $k$  material for interlayer dielectrics of multilevel interconnection. copy 2003 Elsevier Science B.V. All rights reserved. 25 Refs.

Descriptors: \*Dielectric films; Silicon compounds; Plasma enhanced chemical vapor deposition; Permittivity; Refractive index; Density (optical); Chemical bonds; Ionic conduction in solids; Carbon inorganic compounds; Oxygen; Fluorine; Molecular vibrations; Fourier transform infrared spectroscopy

Identifiers: Interlayer dielectrics

Classification Codes:

708.1 (Dielectric Materials); 804.2 (Inorganic Compounds); 802.2 (Chemical Reactions); 932.3 (Plasma Physics); 741.1 (Light & Optics); 801.4 (Physical Chemistry); 701.1 (Electricity, Basic Concepts & Phenomena); 931.3 (Atomic & Molecular Physics)

708 (Electric & Magnetic Materials); 804 (Chemical Products Generally); 802 (Chemical Apparatus & Plants; Unit Operations; Unit Processes); 932 (High Energy Physics; Nuclear Physics; Plasma Physics); 701 (Electricity & Magnetism); 741 (Light, Optics & Optical Devices); 801 (Chemistry); 933 (Solid State Physics); 931 (Applied Physics Generally)

70 (ELECTRICAL ENGINEERING, GENERAL); 80 (CHEMICAL ENGINEERING, GENERAL); 93 (ENGINEERING PHYSICS); 74 (LIGHT & OPTICAL TECHNOLOGY)

2/9/3 (Item 1 from file: 94)

DIALOG(R)File 94:JICST-EPlus

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05098233 JICST ACCESSION NUMBER: 02A0230058 FILE SEGMENT: JICST-E

Etching characteristics of SiOC film for low- $k$  dielectrics.

YAMASHITA T (1); YAMANAKA M (1); SASAKI T (1); TOMOHISA S (2); SAKAMORI S (2); FUJIWARA N (2); MIYATAKE H (2)

(1) Matsushita Electric Industrial Co., Ltd.; (2) Mitsubishi Electric Corp. Proc Int Symp Dry Process, 2001, VOL.1st, PAGE.153-158, FIG.8, TBL.2, REF.4 JOURNAL NUMBER: Y0378BAP

UNIVERSAL DECIMAL CLASSIFICATION: 621.382.002.2

LANGUAGE: English COUNTRY OF PUBLICATION: Japan

DOCUMENT TYPE: Conference Proceeding

ARTICLE TYPE: Original paper

MEDIA TYPE: Printed Publication

ABSTRACT: Etching characteristics of SiOC film for low- $k$  dielectric material ( $k=2.8-3.0$ ) using fluorocarbon plasmas have been studied employing a dual frequency parallel plate reactive ion etching system. Under the conditions optimized for p-TEOS using a  $\text{CH}_2\text{F}_2\text{CF}_4/\text{O}_2\text{Ar}$  gas chemistry, the SiOC etch rate and selectivity to photoresist were 164 nm/min and 2.2, slightly lower than those of p-TEOS, and a rough surface was formed at the trench bottom. The etching mechanism for SiOC containing methyl group ( $-\text{CH}_3$ ) was examined using optical emission spectroscopy and X-ray photoelectron spectroscopy analyses. As a result of discussion, it was found that C2 and CH radicals produced in the plasma cause the rough surface. Introducing a F-rich  $\text{CHF}_3/\text{CF}_4/\text{O}_2\text{Ar}$  gas chemistry to compensate this effect in the SiOC etching, the bottom roughness was successfully improved and excellent etched profiles of 0.2  $\mu\text{m}$  patterns were realized. (author abst.)

DESCRIPTORS: semiconductor process; RIE; silicon compound; dielectric thin

film; permittivity; silicon; argon; mixed gas; trench etching; processing);  
surface roughness; cross section; reaction mechanism  
BROADER DESCRIPTORS: production process(control); process; plasma etching;  
dry etching; etching; surface treatment; treatment; carbon group  
element compound; thin film; membrane and film; dielectrics; dielectric  
material; material; ratio; aliphatic chlorine compound; aliphatic  
halogen compound; organohalogen compound; organochlorine compound;  
aliphatic fluorine compound; organofluorine compound; rare gas; element  
; third row element; gas; mixture; object; working and processing;  
surface quality; flatness(property); property; face; mechanism  
CLASSIFICATION CODE(S): NC03030V

2/9/4 (Item 1 from file: 144)  
DIALOG(R)File 144:Pascal  
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16151326 PASCAL No.: 03-0306189  
**Characterization of low-dielectric-constant SiOC thin films deposited by PECVD for interlayer dielectrics of multilevel interconnection**  
HYEONG JOON KIM; SHAO Qingyi; KIM Yoon-Hae  
School of Materials Science and Engineering, Seoul National University,  
Seoul, 151-742, Korea, Republic of  
Journal: Surface & coatings technology, 2003, 171 (1-3) 39-45  
ISSN: 0257-8972 CODEN: SCTEEJ Availability: INIST-15987;  
354000118190760080  
No. of Refs.: 25 ref.  
Document Type: P (Serial) ; A (Analytic)  
Country of Publication: Switzerland  
Language: English  
Low-dielectric-constant (k) SiOC films were deposited on p-type (100) Si substrates by radio frequency (RF) PECVD with a bis-trimethylsilylmethane (BTMSM) precursor and oxygen gas. As more carbon was incorporated into the SiOC film, both the film density and refractive index decreased. This is because the decrease in film density on adding carbon in SiOC films resulted from termination of the Si-O bonding network by replacing oxygen atoms with hydrocarbon groups. The bonding characteristics of low-k SiOC and SiOF films were investigated by Fourier-transform infrared (FTIR) spectroscopy. The Si-O stretching vibration mode in SiOF films shifted to higher wavenumber with increasing fluorine incorporation, while that in SiOC films shifted to lower wavenumber as the carbon content increased. The origin of the low k of SiOC films was also investigated by determining the electronic, ionic and dipolar contributions. It was found that the low k of SiOC films mainly results from a reduction of the ionic contribution due to a decrease in Si-O bonds in the films. Investigating the compatibility with integration processes showed that modification of the conventional process was required to improve the etch characteristics of the SiOC film. Post-deposition treatment of SiOC films in hydrogen plasma was effective. The results of this study show that SiOC film is very promising low-k material for interlayer dielectrics of multilevel interconnection.

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\*\*\* format unless you enter the SET DETAIL ON command. \*\*\*

You have 62 files in your file list.

(To see banners, use SHOW FILES command)

?s (selectivity)(15w)(SiOC or SiCO or oxycarbide or carbon(w)doped(4n)(oxide or dioxide))

Your SELECT statement is:

s (selectivity)(15w)(SiOC or SiCO or oxycarbide or carbon(w)doped(4n)(oxide or dioxide))

Items	File
1	8: Ei Compendex(R)_1970-2003/Sep W3
1	34: SciSearch(R) Cited Ref Sci_1990-2003/Sep W3
1	99: Wilson Appl. Sci & Tech Abs_1983-2003/Aug
1	103: Energy SciTec_1974-2003/Sep B1
1	144: Pascal_1973-2003/Sep W3
1	315: ChemEng & Biotec Abs_1970-2003/Aug
1	347: JAPIO Oct 1976-2003/May(Updated 030902)
4	348: EUROPEAN PATENTS_1978-2003/Sep W03
2	349: PCT FULLTEXT_1979-2002/UB=20030925,UT=20030918
Examined	50 files
2	354: Ei EnCompassLit(TM)_1965-2003/Sep W4
2	399: CA SEARCH(R)_1967-2003/UD=13914
11	654: US Pat.Full._1976-2003/Sep 30

12 files have one or more items; file list includes 62 files.

?b 8,144,354;s (selectivity)(15w)(SiOC or SiCO or oxycarbide or carbon(w)doped(4n)(oxide or dioxide))

01oct03 14:37:09 User264704 Session D160.2

\$5.56 2.778 DialUnits File411

\$5.56 Estimated cost File411

\$0.92 TELNET

\$6.48 Estimated cost this search

\$6.51 Estimated total session cost 2.933 DialUnits

SYSTEM:OS - DIALOG OneSearch

File 8:Ei Compendex(R) 1970-2003/Sep W3

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File 144:Pascal 1973-2003/Sep W3

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File 354:Ei EnCompassLit(TM) 1965-2003/Sep W4

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**\*File 354: Ei EnCompassLit/Ei EnCompassPat combined usage is limited to 2 hrs/yr.**

Set	Items	Description
---	-----	-----
	115942	SELECTIVITY
	124	SIOC
	84	SICO
	533	OXYCARBIDE
	840092	CARBON
	136726	DOPED
	508332	OXIDE
	223279	DIOXIDE
	40	CARBON(W)DOPED(4N)(OXIDE OR DIOXIDE)
S1	4	(SELECTIVITY)(15W)(SIOC OR SICO OR OXYCARBIDE OR CARBON(W)DOPED(4N)(OXIDE OR DIOXIDE))

?rd

...completed examining records

S2 3 RD (unique items)  
?t s2/full/all

2/9/1 (Item 1 from file: 8)  
DIALOG(R)File 8: Ei Compendex(R)  
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04003789 E.I. No: EIP94121504788

**Title: Isomerization of n-heptane on an oxygen-modified molybdenum carbide catalyst**

Author: Blekkan, Edd A.; Pham-Huu, Cuong; Ledoux, Marc J.; Guille, Jean

Corporate Source: Universite Louis Pasteur, Strasbourg, Fr

Source: Industrial & Engineering Chemistry Research v 33 n 7 Jul 1994. p 1657-1664

Publication Year: 1994

CODEN: IECRED ISSN: 0888-5885

Language: English

Document Type: JA; (Journal Article) Treatment: A; (Applications); X; (Experimental)

Journal Announcement: 9502W1

**Abstract:** The isomerization of n-heptane in the presence of hydrogen has been carried out over a molybdenum carbide catalyst modified by an oxygen treatment. Heptane was isomerized selectively to isoheptanes, a reaction which is difficult over traditional bifunctional catalysts due to extensive cracking. The C//7 products were mainly monomethylhexanes, 2-methylhexane and 3-methylhexane, in close to equilibrium ratios. A typical bifunctional catalyst (Pt supported on an acidic zeolite) gave similar isomerization products, but mostly propane and isobutane as the cracked products. The selectivity over the oxidized carbide was found to be a function of pressure but independent of the conversion; increased the hydrogen pressure led to a decrease in the C//7 selectivity. This was found to be different from the Pt/zeolite catalyst, over which the selectivity was a function of the conversion; a high **selectivity** was only obtained at low conversions. The active carbide-based catalyst was probably an **oxycarbide** of molybdenum. The results obtained over the oxidized carbide catalyst are discussed in terms of a bond-shift mechanism via a metallocyclobutane intermediate. (Author abstract) Refs.

**Descriptors:** \*Catalysis; Isomerization; Paraffins; Catalyst selectivity; Catalysts; Carbides; Molybdenum compounds; Pressure effects; Hydrogen; Surface treatment

**Identifiers:** n-Heptane; Molybdenum carbide; Reaction mechanisms; Intermediates

**Classification Codes:**

802.2 (Chemical Reactions); 804.1 (Organic Components); 804.2 (Inorganic Components); 802.3 (Chemical Operations)

802 (Chemical Apparatus & Plants); 804 (Chemical Products); 803 (Chemical Agents & Basic Industrial Chemicals)

80 (CHEMICAL ENGINEERING)

2/9/2 (Item 1 from file: 354)  
DIALOG(R)File 354: Ei EnCompassLit(TM)  
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675495 EnCompassLit Document No.: 200114575

**Active sites of the isomerization of n-butane over oxygen-modified molybdenum carbide and molybdenum oxides**

Author: Liebig S.; Doukkali Kh.; Grunert W.; Gerlach T.

Corporate Source: Lehrstuhl fur Technische Chemie, Ruhr-Univesitat Bochum; Berlin-Adlershof Appl. Chem. Inst.

Source: Studies in Surface Science and Catalysis 130/C 2369-2374 (ISSN 0167--2991) (2000)

Language: English

ISSN: 0167--2991

CODEN: SSCTD

Journal Name: Studies in Surface Science and Catalysis

Document Type: JOURNAL ARTICLE

Publication Date: 0000

Ei EnCompassLit Bulletin Headings: CATALYSTS AND CATALYSIS;  
CATALYSTS/ZEOLITES; CHEMICAL PRODUCTS AND PROCESSES; PETROLEUM REFINING  
AND PETROCHEMICALS; PETROLEUM-PROCESSING CATALYSTS; PURE HYDROCARBONS

Abstract:

Butane isomerization was studied at 623 K over MoO(sub)3, MoO(sub)2, Mo(sub)90(sub)2(sub)6, Mo(sub)40(sub)1(sub)1, etc. Interaction of MoO(sub)3 with n-butane/H(sub)2 at 623 K resulted in gradual development of a highly selective isomerization catalyst. The isomerization site survived contact with air under ambient conditions. XRD provided indications of oxycarbide formation, but no correlation with the isomerization **selectivity**. XPS showed no indication for the presence of **oxycarbide** after contact with air. With MoO(sub)3, selectivities > 90% were achieved and held over a prolonged reaction period. With triclinic Mo(sub)40(sub)1(sub)1, high selectivity was observed without pronounced transient behavior. The active site was an oxide structure of high-valence Mo. Spectra, 5 graphs, and 12 references

Index Terms: ACTIVE SITE; AIR; ANALYTICAL METHOD; BRANCHED CHAIN-P;  
\*BUTANE-\*A; \*C4-\*AP; CARBON; CATALYSIS; \*CATALYST; DIFFRACTION ANALYSIS  
; EFFICIENCY; ELEMENT-A; GROUP IVA; GROUP VIA; GROUP VIB;  
\*HYDROCARBON-\*AP; HYDROGEN-A; \*HYDROISOMERIZATION; IDE; \*ISOMERIZATION;  
MOLECULAR STRUCTURE; MOLYBDENUM; MOLYBDENUM OXIDE; MOLYBDENUM OXIDE,  
MOO3; OPERATING CONDITION; OXYGEN; PHYSICAL PROPERTY; REACTION  
MECHANISM; REACTION TIME; \*SATURATED CHAIN-\*AP; SELECTIVITY; \*SINGLE  
STRUCTURE TYPE-\*AP; \*STRAIGHT CHAIN-\*A; TEMPERATURE; TEMPERATURE 300 TO  
600 C; TRANSITION METAL; VALENCE; X RAY DIFFRACTION ANALYSIS; YIELD

CAS Registry Numbers: \*106-97-8\*A; 11098-99-0; 11098-99-0 (BT); 1313-27-5;  
1333-74-0A; 7439-98-7; 7440-44-0; 7782-44-7

Sets of Linked Terms: 0006

Linked Terms:

106-97-8A; BUTANE-A; C4-A; HYDROCARBON-A; SATURATED CHAIN-A; SINGLE  
STRUCTURE TYPE-A; STRAIGHT CHAIN-A  
11098-99-0; ACTIVE SITE; CATALYST; GROUP VIA; GROUP VIB; IDE; MOLECULAR  
STRUCTURE; MOLYBDENUM; MOLYBDENUM OXIDE; OXYGEN; TRANSITION METAL;  
VALENCE  
11098-99-0 (BT); 1313-27-5; ACTIVE SITE; CATALYST; GROUP VIA; GROUP VIB  
; IDE; MOLECULAR STRUCTURE; MOLYBDENUM; MOLYBDENUM OXIDE;  
MOLYBDENUM OXIDE, MOO3; OXYGEN; TRANSITION METAL; VALENCE  
7439-98-7; 7440-44-0; 7782-44-7; ACTIVE SITE; CARBON; CATALYST; GROUP  
IVA; GROUP VIA; GROUP VIB; IDE; MOLECULAR STRUCTURE; MOLYBDENUM;  
OXYGEN; TRANSITION METAL; VALENCE  
BRANCHED CHAIN-P; C4-P; HYDROCARBON-P; SATURATED CHAIN-P; SINGLE  
1333-74-0A; ELEMENT-A; HYDROGEN-A

2/9/3 (Item 2 from file: 354)

DIALOG(R) File 354:Ei EnCompassLit(TM)

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0556735 EnCompassLit Document No.: 4300332

**n-Hexane and n-heptane isomerization at atmospheric and medium pressure on  
MoO3-carbon-modified supported on SiC and (GAMMA)-Al2O3**

Author: Cuong P H; Peschiera E; Gallo P del; Ledoux M J

Corporate Source: Universite Louis Pasteur I; Ecoles des Hautes Etudes des  
Industries Chimiques de Strasbourg

Source: Applied Catalysis A: General (ISSN 0926-860X) V132 N.1 77-96  
(11/9/95)

Language: English

ISSN: 0926-860X

Publication Date: 951109

Ei EnCompassLit Bulletin Headings: CATALYSTS/ZEOLITES; CHEMICAL PRODUCTS;  
CHEMICALS-PROCESSING CATALYSTS; HYDROGENATION; PETROLEUM PROCESSES;  
PETROLEUM REFINING AND PETROCHEM; PETROLEUM-PROCESSING CATALYSTS; PURE  
HYDROCARBONS

Abstract:

n-Hexane and n-heptane isomerization at atmospheric and medium

pressure on MoO(sub)3 carbon-modified supported on S nd  
 .gamma.-Al(sub)2O(sub)3. The results obtained for n-hexane and  
 n-heptane isomerization at atmospheric and medium (20 bar) H(sub)2  
 pressures over MoO(sub)3 supported on high specific surface area SiC  
 (8.9% Mo) and on .gamma.-Al(sub)2O(sub)3 (19.5% Mo) were compared. The  
 active species was a molybdenum oxycarbide formed by decomposition of  
 the hydrocarbon. This species was extremely active on SiC at  
 350.degree.C, whereas on .gamma.-Al(sub)2O(sub)3, the activity was one  
 order of magnitude lower, and 8.9% Mo on Al(sub)2O(sub)3 was inactive.  
 This difference is explained by the fact that on SiC the interaction  
 between MoO(sub)3 and support is low and leads to the formation of a  
 more active phase. Increasing the total pressure improves  
 isomerization activity and **selectivity**, i.e., formation of the  
**oxycarbide** phase is strongly dependent on on the reaction conditions.  
 The results lead to the conclusion that isomerization occurs via a  
 metallacyclobutane intermediate with a high rate of methyl shift. No  
 deactivation with time on stream was observed. Tables, spectra,  
 graphs, and 31 references

Index Terms: \*ACTIVITY; ALUMINUM; ALUMINUM OXIDE; C6-A; C7-A; CARBON;  
 \*CATALYST; \*CATALYST ACTIVITY; CATALYST SUPPORT; DEACTIVATION;  
 DECOMPOSITION; ELEMENT; GROUP IIIA; GROUP IVA; GROUP VIA; GROUP VIB;  
 HEPTANE-A; HEXANE-A; HYDROCARBON-A; HYDROGEN; IDE; \*ISOMERIZATION;  
 MOLYBDENUM; MOLYBDENUM OXIDE; MOLYBDENUM OXIDE, MOO3; NONE; ON STREAM;  
 OPERATING CONDITION; OXYGEN; PARTIAL PRESSURE; \*PHYSICAL PROPERTY;  
 PRESSURE; \*REACTION MECHANISM; SATURATED CHAIN-A; SELECTIVITY; SILICON;  
 SILICON CARBIDE; SINGLE STRUCTURE TYPE-A; SPECIFIC SURFACE; STRAIGHT  
 CHAIN-A; TEMPERATURE; TEMPERATURE 300 TO 600 C; \*USE

CAS Registry Numbers: 110-54-3A; 11098-99-0; 1313-27-5; 1344-28-1;  
 142-82-5A; 409-21-2

Sets of Linked Terms: 0007

Linked Terms:

110-54-3A; 142-82-5A; C6-A; C7-A; HEPTANE-A; HEXANE-A; HYDROCARBON-A;  
 SATURATED CHAIN-A; SINGLE STRUCTURE TYPE-A; STRAIGHT CHAIN-A  
 11098-99-0; 1313-27-5; 409-21-2; CARBON; CATALYST; GROUP IVA; GROUP VIA  
 ; GROUP VIB; IDE; MOLYBDENUM; MOLYBDENUM OXIDE; MOLYBDENUM OXIDE,  
 MOO3; OXYGEN; SILICON; SILICON CARBIDE; USE  
 409-21-2; CARBON; CATALYST SUPPORT; GROUP IVA; IDE; SILICON; SILICON  
 CARBIDE; USE  
 1344-28-1; ALUMINUM; ALUMINUM OXIDE; CATALYST SUPPORT; GROUP IIIA;  
 GROUP VIA; IDE; OXYGEN; USE  
 11098-99-0; 1313-27-5; 1344-28-1; ALUMINUM; ALUMINUM OXIDE; CATALYST;  
 GROUP IIIA; GROUP VIA; GROUP VIB; IDE; MOLYBDENUM; MOLYBDENUM OXIDE  
 ; MOLYBDENUM OXIDE, MOO3; OXYGEN; USE  
 ELEMENT; HYDROGEN  
 DEACTIVATION; NONE